

# I2C 2002-1

# Evaluation Board Kit

The I2C 2002-1 Evaluation Board is a low cost I<sup>2</sup>C based platform that allows Field Application Engineers, designers and educators to use their Personal Computer (PC) to easily test and demonstrate new I<sup>2</sup>C devices in a platform that allows multiple operations to be performed in a setting similar to a real system environment.

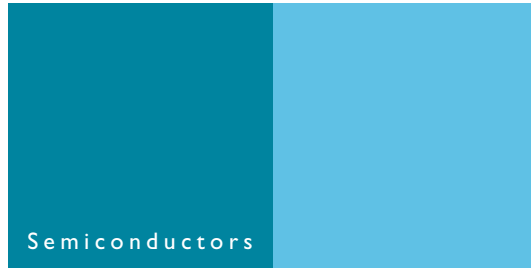
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## Device Description

The devices used on the evaluation board are representative of the various general purpose I<sup>2</sup>C product families being introduced by Philips. They were selected for the following reasons:

- **PCA9501**—To show the programming difference between the PCF8574 8-bit GPIO (of which the PCA9501 has the same state machine) and the PCA9554 8-bit GPIO (more complex state machine) and to showcase this new device, that has both the PCF8574 GPIO and PCF8582C-2 2Kbit serial EEPROM contained in the same package, with 6 address pins that allow up to 64 devices on the same bus.
- **PCA9561**—To show its use as a DIP switch replacement.
- **PCA9543**—To show its use as a 2 channel multiplexer/switch.
- **PCA9554/55**—To show how I/O expanders can be used as LED drivers, how they can be used to provide input and output to the bus master and to show the size comparison of the PCA9555 in three different packages. The large Surface Mount (SOIC - D), the smaller Thin Small Surface Package (TSSOP - PW) and the very small Heat Sink Very Thin Quad Flat Pack No Leads (HVQFN - BS).
- **PCA9550/51**—To show how the LED Blinkers are used to blink LEDs and to show how unused bits can be utilized as general purpose inputs and outputs.
- **PCF8582C-2** - To show 2Kbit EEPROMs and have two identical devices to multiplex with the PCA9543.
- **LM75A**—To show temperature sensors and have two identical devices to multiplex with the PCA9543.
- **PCA9515 and P82B96**—To show that I<sup>2</sup>C bus expanders allow larger loading on the I<sup>2</sup>C bus and to be able to connect a second card to the first evaluation board. To show how the P82B96 can be used to send both I<sup>2</sup>C clock, data signals and power supply over USB cables or telephone wires.

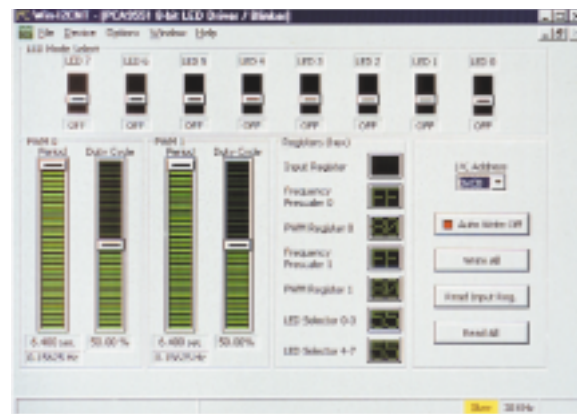


## Kit Description

The I2C 2002-1 Evaluation Board Kit includes:

- **I2C 2002-1 Evaluation Board**—5" x 5" 2 layer printed circuit board featuring 11 different I<sup>2</sup>C slave devices.
- **I2CPORT v2 Adapter Card**—plugs into the PC parallel port and provides the interface between the PC (bus master) and the I<sup>2</sup>C bus slaves on the evaluation board at speeds over 100 kHz.
- **4-wire Connection Cable**—connects the I2CPORT v2 Adapter Card with the I2C 2002-1 Evaluation Board at normal SDA/SCL signal levels.
- **USB Adapter Card**—connects the I2CPORT v2 Adapter Card with the I2C 2002-1 Evaluation Board through a USB cable (cable not included) via the P82B96. NOTE: This is not a normal USB connection, the USB cable and USB connectors are used to carry the SCL/SDA signals at the special P82B96 voltage levels.
- **9 V Power Supply**—provides power to the evaluation board devices and LEDs. Operates from 100 to 240 volts at 47 to 66 Hz Edison plug on one side and 9 volt mini-plug on the other side.
- **CD-ROM**—contains operating instructions and Win-I2C2NT software
  - **Operating Instructions**—detailed application notes, software operating instructions and set up procedures.
  - **Win-I2C2NT (32-bit)**—application software that provides the device specific and universal mode graphical interface between the PC and I2CPORT v2 Adapter Card to control the I<sup>2</sup>C bus slaves featured on the I2C 2002-1 Evaluation Board. Compatible with Windows 95/98/ME/2000/NT and XP operating systems.

## Win-I2C2NT Graphical Interface for PCA9551 LED Blinker



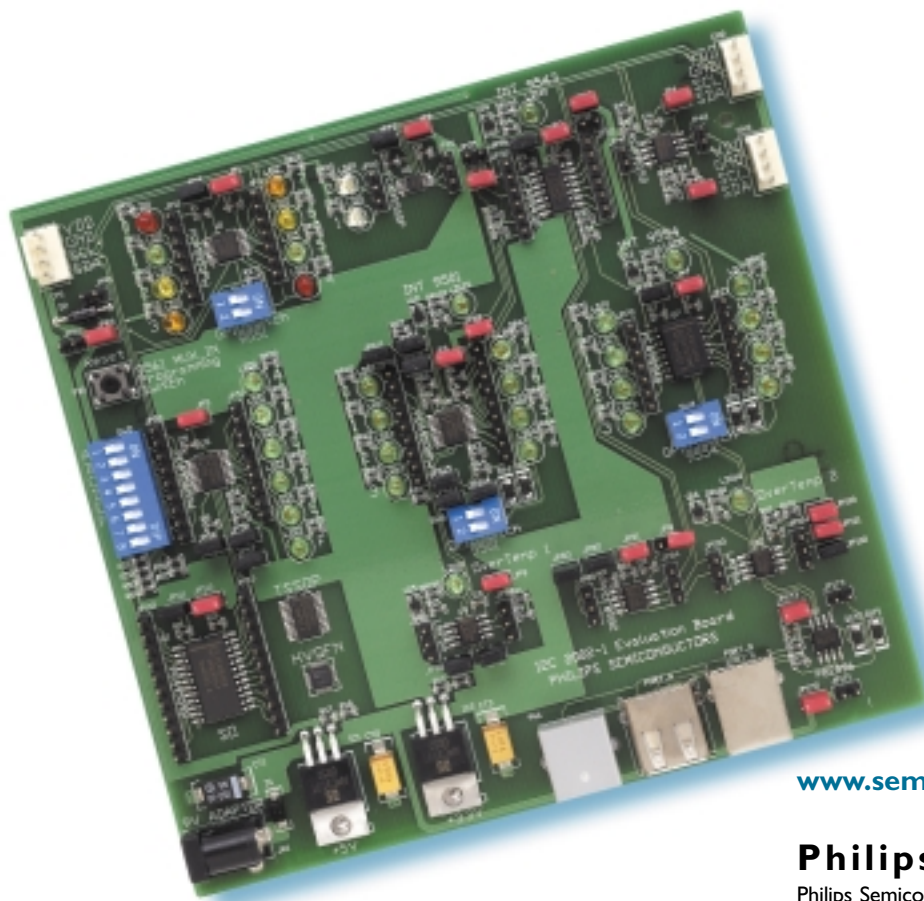
# PHILIPS

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Purchase the I2C 2002-1 Evaluation Board Kit at  
[www.demoboard.com](http://www.demoboard.com)



### Typical Experiments

Some of the experiments and demonstrations that can be performed using the I2C 2002-1 Evaluation Board include:

- Program and Blink LEDs using the GPIOs and/or the LED Blinker devices
  - Learn differences in programming and blinking LEDs using the older and newer GPIO and the 2/8-bit LED Blinkers.
  - See LED Blinker continue to blink LEDs when the I<sup>2</sup>C bus is disconnected.
- Command temperature sensors and 2K EEPROMs with same and different addresses through the PCA9543 two channel switch used as multiplexer and for voltage translation between 3.3V and 5V
  - Learn how the multiplexer, 2Kbit serial EEPROM and temperature sensor work.
  - See what happens when the master sends commands to devices with the same address at the same time.
  - See temperature sensor response at different voltage levels.
- Program the Mux I<sup>2</sup>C EEPROM as a DIP switch replacement

[www.semiconductors.philips.com/logic/i2c](http://www.semiconductors.philips.com/logic/i2c)

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Purchase of Philips I<sup>2</sup>C components conveys a license under the Philips' patent to use the components in the I<sup>2</sup>C system provided the system conforms to the I<sup>2</sup>C specification defined by Philips.



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